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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,238	10/26/2001	Carlos A. Gonzalez	884.535US1	5267
21186	7590	10/06/2004		
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER MITCHELL, JAMES M	
			ART UNIT 2813	PAPER NUMBER

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/003,238

Applicant(s)

GONZALEZ ET AL.

Examiner

James M. Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication; even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-29,35-40 and 46-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-29,35-40 and 46-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed July 15, 2004.
2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 22-29, 35-40 and 46-52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. While applicant contends that support can be found in figures 5-7 of its application, no such support is found by the examiner; the ordinary plain meaning of particles distributed substantially throughout a layer require that particles are formed in all parts of the layer at the same corresponding positions along the layer. In contrast, there are areas of the underfill that are free from particles, whereby the particles that are distributed in the layer are nonuniform (i.e. no conformity/pattern to the placement of particles throughout layers).

Response to Amendment

4. The amendment filed July 15, 2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material that is not supported by the original disclosure is as follows: particles are distributed substantially uniformly throughout an underfill. While applicant contends that support

can be found in figures 5-7 of its application, no such support is found by the examiner; the ordinary plain meaning of particles distributed substantially throughout a layer require that a majority of the particles are formed in substantially all of the layer with conformity/uniform pattern in the placement of particles.

Applicant is required to cancel the new matter in the reply to this Office Action.

5. The declaration filed on January 26, 2004 under 37 CFR 1.131 has been considered but is ineffective to overcome the Hoang reference. Besides Hoang having a filing date earlier (November 15, 1999) than what applicant attempts to swear behind (January 5, 2001), there is nothing in the 1.131 declaration that establishes particles distributed substantially throughout a layer, which is required as apart of the claimed subject matter.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 22-29, 35-40 and 46-51 are rejected under 35 U.S.C. 102(e) as being anticipated by Hoang (U.S. 6,373,142).

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8. Hoang discloses (Fig 2B, 3B, 4) an electronic assembly comprising and a component package fabricated by: depositing an underfill material (306) over a plurality of pads (not shown; under solder 204) in a component-mounting area of a substrate (302) with at least one IC (300; Col. 1, Lines 12-13), the hardened underfill material (abstract) comprising a filler material containing substantially, spherical particles (312) made of a material potentially inhibiting connection via silica; wherein the particles are distributed substantially uniformly throughout the underfill material (particles extend throughout underfill, with particles placed in substantially the same location throughout the underfill and therefore uniform) placing a component on the component-mounting area, such that terminals of the component are aligned with corresponding pads and substantially enveloped in the underfill material; with the terminals via inherent pad on chip (flip chip, pad needed for contact to active surface) contacting terminal (204) physically contacting the pads; wherein some of the particles are inherently of such size and shape as to potentially inhibit suitable physical connection (via size between .05 - 40 microns) and wherein any particles remaining (i.e. none) do not prevent physical and electrical contact between pads and said terminals; and the particles' size ranges from .05 to 40 microns (Col. 6, Lines 4-6); and the underfill comprising a flux (Col. 9, Lines 26-27).

9. With respect to product by process limitations recited in claims 22-29, 35-40 and 46-52 such as " pads pre-coated with solder...applying heat..." "the particles potentially inhibiting...unless the particles are substantially removed, and applying suitable pressure to cause the terminals to physically contact the pads and to remove

substantially all potentially inhibiting particles from between corresponding terminals and pads, ” and “applying suitable heat...” the prior art structure is the same as the claimed invention. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).¹

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoang in combination with Gilleo et al. (U.S. 20010003058).

12. Hoang discloses the elements stated in paragraphs 8 and 9 of this office action, but does not appear to disclose that the flux of Hoang is selected from a group consisting of carboxylic acid groups, hydroxyl group or combination thereof.

¹ The other process limitations are likewise incorporated with this paragraph.

13. Because applicant didn't timely traverse examiner's taking of official notice as to carboxylic or hydroxyl being a well known flux at the time the invention was made, traversal is deemed waived and its status of being well known accepted. Gilleo (Par. 0034) is provided only to further evidence flux/underfills comprising carboxylic.

Response to Arguments

14. Applicant's arguments filed July 15, 2004 have been fully considered but they are not persuasive. Applicant contends that the invention is allowable, because allegedly the prior art does not show particles substantially throughout the underfill and that the underfill in Hoang is applied after bonding the chip in contrast to applicant's invention where particles are *squeezed out* between terminals and pads. Examiner respectfully disagrees.

15. First, assuming applicant has support for the limitation "uniform throughout," Hoang (i.e. as much or more than applicant invention shown in 5-7) explicitly shows particles extending throughout its underfill, with particles placed in substantially the same location throughout the underfill. The particles are substantially uniform throughout the underfill within the plain meaning of the claim, which is supported by applicant's own acknowledges that Hoang appears to show fillers distributed substantially uniformly throughout the underfill (App remarks P9). Secondly, while applicant has attempted to distinguish its invention through a process limitation that "particles are squeezed" out, as indicated in previous office actions, the patentability of a product does not depend on its method of production when the product in the product-by-process claim is the same as or obvious from a product of the prior art; the claim is unpatentable even though the

prior product was made by a different process. See MPEP 2113. Because the prior art disclosure is within the scope of the plain meaning of the claim limitation that has resulted in the same product as claimed, applicant's arguments are deemed unpersuasive.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

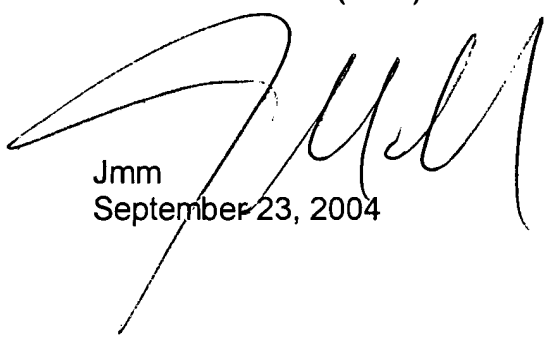
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone


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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jmm
September 23, 2004



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